EXAMINER'S AMENDMENT

Summary

1.   This is in response to an amendment/response filed on July 1st, 2008.

2.   Claims 1, 3, 7, 8, 10, 11, 14, 15, and 16 have been amended.

3.   Claims 6, 9, and 13 have been cancelled.

4.   No new claims have been added.

5.   Claims 1-5, 7, 8, 10-12, and 14-16 are allowed.

EXAMINER'S AMENDMENT

6.   An examiner's amendment to the record appears below. Should the changes and/or

additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR

1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the

payment of the issue fee.

        Authorization for this examiner's amendment was given in a telephone interview with

Aaron Waxler on August 7, 2008.

7.   The application has been amended as follows:

        1. (Currently Amended) A mobile data wireless relay device, the device comprising:

        receiving means for receiving payload data from a data source;

        a buffer for storing payload data for subsequent transmission;

means for receiving status data from similar devices;

status data generation means for generating status data, the status data being derived from the quantity of data in the buffer store and the status data received from other devices comprising data relating to:

the position of the device,

the quantity of data in the buffer store

a scalar forwarding value

and a forwarding direction;

status transmitter memos for transmitting status data to other devices;

selection means for identifying from the status data a receiving device to which the pay\- load data is to be forwarded, the receiving device being located in a position indicated by the for\- warding direction; and payload transmission means for transmitting the payload data to the receiving device;

means for defining a first node and a second node, the nodes being spaced apart by a distance determined by the amount of data stored in the buffer, the first node being assigned a positive value for an attribute q and the second node being assigned a negative value for the attribute q, equal in magnitude to that assigned to the positive node;

the wireless relay device including means for receiving data broadcast by similar wireless relay devices identifying the position data and attribute values of nodes defined by the similar wireless relay devices;

means for generating position values for the first and second nodes based on the attribute values of its own nodes and the positions and attribute values of the nodes defined by the neighboring devices;

means for transmitting the position data and attribute values to similar wireless relay devices; and

means for transmitting payload data to devices that are in the general direction of the second node.

2. (Original) A mobile data wireless relay device according to claim 1, comprising means for receiving payload data transmitted by other similar devices.

3. (Previously Amended) A mobile data wireless relay device according to claim 1, further comprising a data source.

4. (Previously Presented) A mobile data wireless relay device according to claim 1, wherein the selection means is arranged to only identify a suitable receiving device if the scalar forwarding value meets a threshold criterion.

5. (Previously Presented) A mobile data wireless relay device according to claim 1, further comprising condition-monitoring means for monitoring the expected lifetime of the device, and adjusting the scalar forwarding value accordingly.

6. (Cancelled)

7. (Currently Amended) A mobile data wireless relay device according to claim [[6]] 1, wherein:

the positions of the first and second nodes are determined by determining the position in which the aggregate value of the products of the attribute values of each node with each node of one or more neighboring devices, and an arithmetical function of the distance between them, is a minimum or maximum.

8. (Currently Amended) A network of wireless relay devices comprising:

a plurality of mobile wireless relay devices capable of receiving payload data,

each said device comprising means for identifying a forwarding direction relative to itself, and means for transmitting data to another of the devices whose current position is in the said forwarding direction and within a predetermined distance,

wherein the devices co-operate to define their forwarding directions such that payload data is transmitted to a target sink device by means of one or more of the wireless relay devices,

each device defines a positive receive node and a negative transmit node, spaced a pre-determined distance apart, and

the devices co-operate to define the positions of the nodes so as to the minimize aggregate distances between nodes having opposite signs, and

the forwarding direction of each device is defined as the direction from its receive node in which its transmit node lies.

9. (Cancelled)

10. (Currently Amended) A method of operating a plurality of mobile data wireless relay devices, said method comprising:

collecting data in buffer stores in one or more such devices;

exchanging status data between the devices, the status data comprising data relating to:

the positions of the devices, and

the quantity of data in their buffer stores;

each device defining, from the status data, a forwarding direction towards which the payload data in its buffer store is to be forwarded; and

transmitting the stored payload data to a device located in the forwarding direction,

wherein each device defines a first node and a second node, the nodes being spaced apart by a distance determined by the amount of data stored in the buffer, the first node being assigned a positive value for an attribute q and the second node being assigned a negative value for the attribute q, equal in magnitude to that assigned to the positive node;

position values are generated for the first and second nodes based on the status data of the device and neighboring devices;

transmitting the position data and attribute values to similar wireless relay devices; and

transmitting payload data to devices that are in the general direction of the second node.

11. (Previously Amended) A method according to claim 10, wherein:

data is only transmitted from a first device to a second device located in its forwarding direction

if a scalar forwarding value derived from the status data exceeds a predetermined value.

12. (Previously Presented) A method according to claim 10, wherein the status data

includes a measure of the expected lifetime of the device.

13. (Cancelled)

14. (Currently Amended) A method according to claim [[13]] 10, wherein: the positions

of the first and second nodes are determined by determining the position in which an aggregate

value of the products of the attribute values of each node with each node of one or more

neighboring devices, and an arithmetical function of the distance between them, is a minimum or

maximum.

15. (Previously Amended) A method according to claim 14, wherein: the devices co-

operate to define the positions of the nodes so as to minimize aggregate distances between nodes

having opposite signs, and the forwarding direction of each device is defined as the direction

from its receive node in which its transmit node lies.

16. (Currently Amended) A method according to claim [[13]] <u>10</u>, wherein: the devices co-operate to define their forwarding directions such that payload data is transmitted, by means of one or more of the wireless relay devices, to a target sink device defined by a receive node.

Reasons for Allowance

8.   The following is an examiner's statement of reasons for allowance:

9.   For independent claim 1, the prior art fails to show alone or in combination a mobile data wireless relay device including a status data generation means for generating status data, the status data being derived from the quantity of data in the buffer store and the status data received from other devices comprising data relating to: the position of the device, the quantity of data in the buffer store, a scalar forwarding value, and a forwarding direction; and further including "means for defining a first node and a second node, the nodes being spaced apart by a distance determined by the amount of data stored in the buffer, the first node being assigned a positive value for an attribute q and the second node being assigned a negative value for the attribute q, equal in magnitude to that assigned to the positive node."

The prior art of Loher (WO 99/46899) and Kuchibhotla et al. (U.S. Patent 6,993,342) disclose a mobile data wireless relay device including a status data generation means for generating status data, but fails to disclose a "means for defining a first node and a second node, the nodes being spaced apart by a distance determined by the amount of data stored in the buffer, the first node being assigned a positive value for an attribute q and the second node being assigned a negative value for the attribute q, equal in magnitude to that assigned to the positive node."

Independent claims 8 and 10 are allowable for similar reasons. Dependent claims 2-5, 7, 11, 12, and 14-16 are allowable because they depend on the allowed claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BEN H. LIU whose telephone number is (571)270-3118. The examiner can normally be reached on 9:00AM to 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571)272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ricky Ngo/
Supervisory Patent Examiner, Art Unit 2616

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